Perfectionism and Self-Reported Health-Related Behaviors

Dana Burgan

Ball State University

Abstract

The current study examined the relationship between perfectionism and a variety of health behaviors. Participants were 395 undergraduate students from Ball State University. Participants completed the Perfectionism Inventory (PI) to measure perfectionistic tendencies and the Multidimensional Health Behaviors Questionnaire (MHBQ), developed by the researcher, to measure several dimensions of health behaviors. The results showed the MHBQ to have good internal reliability. Factor analysis of the PI did not support the perfectionism constructs proposed by Hill et al., (2004). Only the subscales Organization and Perceived Parental Pressure were supported by the data. The subscale Organization was moderately correlated with overall scores on the MHBQ. Women scored significantly higher on the PI than men. Honors College students scored significantly higher on both the PI and the MHBQ than non-Honors College students. These results suggest there may be a relationship between perfectionistic tendencies and health-related behaviors. Further analysis comparing several different perfectionism scales and the MHBQ should be conducted to continue to investigate this relationship. Further analysis should also be conducted using a more diverse population to increase the reliability and validity of the MHBQ.

Acknowledgements

I would like to thank my faculty advisor, Dr. Darrell Butler, for his support and guidance throughout this project. His approach, encouragement, and confidence in my abilities allowed me to gain more from this project (and my entire undergraduate career) than I ever thought possible.

I would also like to thank my fellow students, as well as Dr. David Perkins, from the Psychological Science Departmental Honors course for their support and feedback this year. This project was infinitely more valuable because I was able to experience and learn from the experiences of so many others.

Perfectionism and Self-Reported Health-Related Behaviors

Health-Related Behaviors

Health care spending and utilization has been slowly, yet steadily, growing in the United States (Poisal, et al., 2007). Total spending on health care is projected to reach $4.1 trillion by 2016. Because health care costs affect not only the individual, but also society as a whole, it is important to study ways this spending can be lowered. One such method involves developing interventions to help individuals change unhealthy behaviors and promote healthy behaviors. In order to develop such interventions, it is important to first understand why people engage in health behaviors.

Early researchers focused on health behaviors, or behaviors carried out to maintain or enhance one's health (Kasl & Cobb, 1966; Harris & Guten, 1979). The health belief model is used to explain the cognitive aspects of health behaviors (Rosenstock, 1966). According to this model, two main factors influence whether or not a person engages in certain health behaviors: how much an individual perceives a personal health threat and to what extent that person believes particular health behaviors will lower that threat.

Later, a distinction between two types of health behaviors, health promotion and disease detection, was hypothesized (Millar & Millar, 1993). These researchers defined disease detection as behaviors intended to identify physical pathology, such as checking one's cholesterol levels. Health promotion, on the other hand, was defined as behaviors intended to increase health, such as exercising. This distinction is important because it focuses on both cognitive as well as emotional aspects of health behaviors. Millar & Millar (1993) found support that disease detection is more related to negative affect and the experience of threat, while health promotion is more related to cognition. After watching an anxiety-inducing message about disease detection

or health promotion behaviors, individuals reported being more likely to learn about and engage in health promotion behavior than when they watched a non-anxiety inducing message (Millar & Millar, 1996). Moreover, participants reported being more willing to learn about and engage in disease detection behaviors after watching a non-anxiety inducing message than after watching an anxiety-inducing message.

Van Zuuren & Dooper (1999) examined the role of coping style in disease detection and health promotion. To do so, the researchers developed the Health Promotion-Detection Questionnaire (HPDQ) to measure behaviors. The researchers found a strong positive correlation between the promotion and detection scales, as well as a significant positive correlation between age and detection scale. The monitoring coping style was related to both health promotion and disease detection, while the coping style of blunting was not related to either behavior (Van Zuuren & Dooper, 1999). These results suggest that the constructs of health promotion and disease detection may not be separate, independent constructs.

Perfectionism

The literature on perfectionism has evolved substantially since Burns (1980) developed the first perfectionism scale. This scale presented perfectionism as a unidimensional, mostly negative construct. Since then, most research has examined perfectionism as a multidimensional construct with both positive and negative components (Frost, Marten, Lahart, and Rosenblate, 1990; Hewitt & Flett, 1991; Slaney, Rice, Mobley, Trippi, & Ashby, 2001; Hill, Huelsman, Furr, Kibler, Vicente, & Kennedy, 2004).

Still, no agreed-upon definition of perfectionism exists. Hamachek (1978) was one of the earliest to distinguish between a positive, normal type of perfectionism and a negative, dysfunctional type of perfectionism. He believed all perfectionists have high standards, but,

unlike normal perfectionists, dysfunctional perfectionists do not feel satisfaction from their achievements and criticize themselves for all mistakes, no matter how minor.

Using this view, Frost et al. (1990) developed a scale to measure six subscales of perfectionism: concern over mistakes, personal standards, parental expectations, parental criticism, doubts about actions, and organization. When interpreting responses, the researchers used the subscales personal standards and organization to be indicative of positive, or adaptive, perfectionism, while the subscales of concern over mistakes, doubts about actions, parental expectations, and parental criticism were indicative of negative, or maladaptive, perfectionism.

The Frost Multidimensional Perfectionism Scale (F-MPS) has shown good reliability as well as validity. Several researchers have since used this scale to find relationships between elements of perfectionism and several disorders, such as eating disorders (Bardone-Cone, Weishuhn, and Boyd, 2009; Bastiani, Rao, Weltzin, & Kaye, 1995; Bulik, et al., 2003; Sassaroli, et al., 2008), anxiety disorders (Frost and Steketee, 1997), substance abuse (Flett, et al., 2008), and obsessive-compulsive disorder (Sassaroli, et al., 2008).

Hewitt and Flett (1991) also developed a commonly used multidimensional perfectionism scale known as the Hewitt and Flett Multidimensional Perfectionism Scale (HF-MPS). The HF-MPS includes three subscales: self-oriented perfectionism, other-oriented perfectionism, and socially prescribed perfectionism. Self-oriented perfectionism is considered adaptive, while socially prescribed perfectionism is usually considered maladaptive. This scale has also shown decent reliability and validity. A number of researchers have used this scale to support a relationship between elements of perfectionism and several disorders, including eating disorders (Bardone-Cone, et al., 2009), depression (Macedo, et al., 2008), and substance abuse (Flett, et al., 2008).

Although the majority of researchers use one or both of the aforementioned scales to measure perfectionism, other scales, such as the Almost Perfect Scale-Revised (APS-R), have also been developed (Slaney, 2001). Hill, et al. (2004), noticed the need to combine the F-MPS and the HW-MPS into one scale. The F-MPS and HW-MPS are both empirically validated, though they measure slightly different elements of perfectionism. For instance, the HW-MPS focuses on the motivation behind one's perfectionism, while the F-MPS focuses on several different elements of perfectionism such as concern over mistakes. The two overlap in some areas, but not in all. Therefore, researchers previously had to either include both scales and risk redundancy or had to choose between the two and risk excluding validated elements of perfectionism.

Hill, et al. (2004) combined the two scales and developed the Perfectionism Inventory (PI). This scale includes 8 subscales that encapsulate the important constructs of both the F-MPS and the HW-MPS. These subscales are concern over mistakes, high standards for others, need for approval, organization, parental pressure, planfulness, rumination, and striving for excellence. These 8 scales can then be separated into 2 composite factors: self-evaluative perfectionism (maladaptive), which includes the factors concern over mistakes, need for approval, rumination, and parental pressure, and conscientious perfectionism (adaptive), which includes the factors organization, striving for excellence, planfulness, and high standards for others (Hill, et al., 2004). The researchers conducted 3 separate studies to develop the scale and to provide evidence for the criterion-related validity of the PI.

Current Research

Perfectionism has been linked to a large variety of behaviors. As aforementioned, some of the most established relationships involve eating disorders, substance abuse, and obsessive-

compulsive disorder. All of these disorders involve aspects of health behaviors. The current research examined the relationship between perfectionism, using the PI, and health-related behaviors. To measure health-related behaviors, I developed a scale based on the HPDQ (Van Zuuren and Dooper, 1999). After initial development, I hypothesized that my scale, the Multidimensional Health Behaviors Questionnaire (MHBQ), would have seven subscales: drug-related behaviors, avoidance behaviors, maintenance behaviors, self-diagnosis/self-treatment behaviors, professional reliance behaviors, exercise behaviors, and nutrition behaviors. Additionally, I hypothesized that the items could be divided into health promotion and disease detection behaviors.

Maladaptive coping styles have been shown to be a potential moderating factor between perfectionism and distress or dysfunction (Park, Paul Heppner, & Lee, 2010). The adaptive coping style of monitoring has been shown to be positively correlated with both health promotion and disease detection behaviors (Van Zuuren & Dooper, 1999). Therefore, I hypothesize that self-evaluative perfectionism scores will be negatively correlated with overall MHBQ scores. Moreover, the subscales of rumination and concern over mistakes will be negatively correlated with both behaviors. Conscientious perfectionism scores, on the other hand, will be positively correlated with overall MHBQ scores.

Method

Participants

Participants were 395 undergraduate students from Ball State University. Of the 395 participants, 275 reported being female (69.6%). Most reported being Caucasian (92.9%); the remaining reported being African American (2.0%), Hispanic (2.3%), Native American (0.3%), or Other (2.5%). There were two groups selected differently. Senior undergraduate students and

members of the Honors College were recruited via email (N = 169). Recruits from the Honors College were entered into a drawing to receive a $20 Starbucks gift card as incentive. These particular demographics were sought because it was anticipated that members of the Honors College would be more likely to display perfectionistic tendencies and upper-level students would be more likely to engage in the health behaviors being measured. One hundred and twenty-one participants reported being members of the Honors College, 98 were also female (81.0%). The second group were students enrolled in an introductory psychology courses (N = 226). Introductory psychology students received one half hour of research participation credit for participating.

Materials

In order to evaluate the research hypotheses, participants completed three questionnaires: the Perfectionism Inventory (PI), the Multidimensional Health Behaviors Questionnaire (MHBQ), and a demographic survey.

Perfectionism Inventory (PI). The 59-item scale was used to measure perfectionism. The PI consists of eight subscales: Concern Over Mistakes (CM), High Standards for Others (HSO), Need for Approval (NA), Organization (O), Perceived Parental Pressure (PP), Planfulness (P), Rumination (R), and Striving for Excellence (SE). An overall Perfectionism score consists of all eight subscales, while a Conscientious Perfectionism score and Self-Evaluative Perfectionism score consist of the subscales HSO, O, P, SE, and CM, NA, PP, and R, respectively. Participants were asked to rate each statement on a five-point Likert scale from 1 (strongly agree) to 5 (strongly disagree). Scores for individual participants could range from 59 (strongly disagree with all 59 statements) to 295 (strongly agree with all statements).

Multidimensional Health Behaviors Questionnaire (MHBQ). The 30-item questionnaire was developed by the researcher to measure a variety of health behaviors and includes five subscales. The MHBQ initially contained 43 items and was developed out of the Health-Promotion and Disease Detection Questionnaire (Van Zuuren & Dooper, 1999). To update and expand the measure, the author researched a variety of health-related behaviors and developed a multidimensional health behaviors survey. Then, the researcher consulted three professionals with expertise in health-related areas (e.g. a professor of Health Science) as well as three professionals with experience in scale development (e.g. a professor of Psychological Science) to further validate and clarify the measure. Finally, the researcher hypothesized seven subscales within the MHBQ. After conducting an item analysis, five subscales were formulated and each item was correlated with its own subscale, as well as the other subscales. Items were removed to increase the item to subscale correlations. The five subscales were identified as nutrition behaviors (10 items), exercise behaviors (3 items), maintenance behaviors (6 items), drug-related behaviors (5 items), and professional-reliance behaviors (6 items). Participants indicated how often the health behaviors stated applied to them using a 6-point Likert scale, where 0 = *Unsure* and 5 = *Always*.

Demographic survey. Participants were asked to respond to 11 demographic questions regarding such details as age, gender, race, major, GPA, marital status, athletic status, and Honors College status.

Procedure

Approval for the study was obtained by the Ball State University Institutional Review Board. Honors College and senior undergraduate students were recruited via email and were given a link to participate in the study. The surveys were made available online using the InQsit

testing system at Ball State University. Participants recruited via email were provided with a link to surveys in the email. Students in Introduction to Psychology used the Department of Psychological Science research participation signup system. This system provided a link to the surveys. Before proceeding to the survey, participants were required to read a study introduction and agree to participate before continuing. Participants completed the BMHB, the PI, and the demographic survey.

Results

Multidimensional Health Behaviors Questionnaire

An exploratory factor analysis was conducted using a principal component analysis. The scree plot indicated five subscales. These were extracted and a varimax rotation was calculated. Four of the subscales hypothesized by the researcher were consistent with the results of the factor analysis: drug-related behaviors, nutrition behaviors, exercise behaviors, and professional-reliance behaviors. The remaining subscale that emerged was reviewed for commonalities and was identified as maintenance behaviors. Item to subscale correlations were conducted and items were removed to increase item to subscale correlations. A total of 13 items were removed from the questionnaire. See table 1 for a complete list of removed items. After removing items, the item to subscale correlations were very strong. See table 2 for item to subscale Pearson Correlations.

Perfectionism Inventory

Item to scale correlations and item to subscale correlations were low for the subscales proposed by Hill et al., (2004). Therefore, an exploratory factor analysis was conducted using a principal component analysis. The screen plot suggested three subscales. Two of the subscales hypothesized by Hill et al., were consistent with the results of the factor analysis: Perceived

Parental Pressure (N = 7) and Organization (N = 8). The remaining items (N = 44) were grouped together.

Relationship between MHBQ and PI

Correlations between the five MHBQ subscales and the three PI subscales were conducted. The PI subscale Organization was only modestly correlated with Nutrition Behaviors (r = .265, p < .001), Maintenance Behaviors (r = .368, p < .001), and Exercise Behaviors (r = .241, p < .001). The PI subscale Organization was also moderately correlated with overall health scores (r = .557, p < .001). None of the other relationships were significant.

Descriptive Statistics

Gender. Women (M = 65.2, SD = 15.5) scored significantly higher on the Perfectionism Inventory than men (M = 60.8, SD = 15.6) An independent samples t-test indicated that this difference is significant (t(388) = -2.56, p < .05). An independent samples t-test indicated no significant differences between gender and overall MHBQ scores (t(359) = -191, ns).

Honors College status. Participants who were members of the Honors College (M = 162.7, SD = 18.0) scored significantly higher on the MHBQ than participants who were not Honors College members (M = 150.9, SD = 24.2)) An independent samples t-test indicated that this difference is significant (t(279.3) = 5.13, p < .01). Members of the Honors College (M = 66.2, SD = 16.4) also scored significantly higher on the PI than participants who were not Honors College members (M = 62.8, SD = 15.2), t(386) = 20.2, p < .05.

Discussion

Implications

MHBQ. Four of the hypothesized subscales (drug-related behaviors, nutrition behaviors, exercise behaviors, and professional-reliance behaviors) were supported by the current research.

The other three hypothesized subscales were not supported by the current research, while one new subscale was implied by the data. The item to subscale correlations were very strong, indicating that several distinct and separate categories of health behaviors exist. The distinction between health promotion and disease detection behaviors was not evident in the current research. This suggests that these two constructs may not be distinct, at least in a college age population.

PI. The subscales proposed by Hill et al. (2004) were not found by the current research and the distinction between Conscientious (adaptive) perfectionism and Self-Evaluative (maladaptive) perfectionism was also not supported. This may suggest that perfectionism is not a multidimensional construct as previously proposed by Hill. It is also possible that this was simply a poor measure of adaptive and maladaptive perfectionism for the sample in this study.

Relationship between MHBQ and PI. Many of the research hypotheses involved the constructs of conscientious perfectionism and self-evaluative perfectionism. Because these constructs were not supported by the data, many of the research hypotheses could not be answered. However, the data suggests that the PI subscale Organization is related to engaging in health behaviors. This relationship seems logical since organization is often necessary to engage in exercise, nutrition, and especially maintenance behaviors.

Descriptive Statistics. Women scored significantly higher on the Perfectionism Inventory than men. Interestingly, women are more likely to be diagnosed with disorders related to perfectionism, such as eating disorders. The finding of a gender difference in the PI scale is consistent with prior research, suggesting that this gender difference exists (Striegel-Moore et al., 2009). Honors College members scored significantly higher on both the PI and the MHBQ than non-Honors College members. This supports the hypothesis that Honors College members would

be more likely to display perfectionistic tendencies than non-Honors College members. This suggests that perfectionism is generally a positive attribute. It is difficult to reconcile these two findings with the lack of replication of the conceptual distinction between adaptive and maladaptive perfectionism.

Methodological Strengths and Limitations

Strengths. The large sample size is a major strength of the current study. The strong item to subscale correlations in the MHBQ provides strong evidence that the scale has research value. However, this value needs to be verified by additional research.

Limitations. The sample was not very ethnically diverse, had a narrow age range, and did not include an even gender split. The use of the Perfectionism Inventory may have hindered the study since the factors proposed by Hill et al., (2004) were not supported by the results.

Future Research

Future research should be conducted using the BMHB to further establish its reliability and validity. Larger and more diverse populations should be used to increase the generalizability of the scale. Specifically, a sample population with a larger age range would be beneficial, since some of the removed items might have been due to the young sample used in the current research. Further exploration of the reasons why individuals either do or do not engage in specific types of health behaviors would be beneficial. A qualitative follow-up study, perhaps interviewing individuals who scored the highest and lowest overall on the BMHB, could be used to answer some of these questions. Research comparing the BMHB with other perfectionism scales with better established reliability and validity, such as the F-MPS, should be conducted. The gender difference could also be further explored.

References

Bardone-Cone, A., Weishuhn, A., & Boyd, C. (2009). Perfectionism and bulimic symptoms in African American college women: Dimensions of perfectionism and their interactions with perceived weight status. Journal of Counseling Psychology, 56, 266-275.

Bastiani, A. M., Rao, R., Weltzin, T., & Kaye, W. H. (1995). Perfectionism in anorexia nervosa. *International Journal of Eating Disorders, 17*, 147-152.

Bulik, C., Tozzi, F., Anderson, C., Mazzeo, S., Aggen, S., & Sullivan, P. (2003). The relation between eating disorders and components of perfectionism. *The American Journal of Psychiatry, 160*, 366-368.

Burns, D. D. (1980) The perfectionist's script for self-defeat. *Psychology Today*, 70-76.

Flett, G., Goldstein, A., Wall, A., Hewitt, P., Wekerle, C., & Azzi, N. (2008). Perfectionism and binge drinking in Canadian students making the transition to University. *Journal of American College Health, 57*, 249- 253.

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research, 14*, 449-468.

Hamachek, D. E. (1978). Psychodynamics of normal and neurotic perfectionism. *Psychology, 15*, 27-33.

Harris, D. & Guten, S. (1979) Health-protective behavior: An exploratory study. Journal of *Health and Social Behavior, 20*, 17-29.

Hewitt, P. L. & Flett, G. L. (1991). Perfections in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology, 60*, 456-470.

Hill, R. W., Huelsman, T. J., Furr, R. M., Kibler, J., Vicente, B. B., & Kennedy, C. (2004). A new measure of perfectionism: The perfectionism inventory. *Journal of Personality Assessment, 82,* 80-91.

Kasl, S. V. & Cobb, S. (1966). Health behaviors, illness behavior, and sick role behavior. *Archives of Environmental Health, 12,* 246-266.

Macedo, A., Bos, S., Marques, M., Maia, B., Soares, M., Pereira, T., et al. (2009). Perfectionism dimensions in pregnancy: A study in Portuguese women. *Women's Mental Health, 12,* 43-52.

Millar, M. G. & Millar, K. U. (1993). Affective and cognitive responses to disease detection and health promotion behaviors. *Journal of Behavioral Medicine, 16,* 1-23.

Millar, M. G. & Millar, K. U. (1996). Effects of message anxiety on disease detection and health promotion behaviors. *Basic and Applied Social Psychology, 18,* 61-74.

Park, H., Paul Heppner, P., & Lee, D. (2010). Maladaptive coping and self-esteem as mediators between perfectionism and psychological distress. *Personality and Individual Differences, 48,* 469-474.

Poisal, J. A., Truffer, C., Smith, S., Sisko, A., Cowan, C., Keehan, S., & Dickensheets, B. (2007). Health spending projections through 2016: Modest changes obscure Part D's impact. *Health Affairs, 26,* 242-253.

Rosenstock, I. M. (1966). Why people use health services. *Milbank Memorial Fund Quarterly, 44,* 94ff.

Sassaroli, S., Lauro, L., Ruggiero, G., Mauri, M., Vinai, P., & Frost, R. (2008). Perfectionism in depression, obsessive-compulsive disorder and eating disorders. *Behaviour Research and Therapy, 46,* 757-765.

Slaney, R. B., Rice, K. G., Mobley, M., Trippi, J., & Ashby, J. (2001). The revised almost perfect scale. *Measurement and Evaluation in Counseling and Development, 34,* 130-145.

Striegel-Moore, R., Rosselli, F., Perrin, N., DeBar, L., Wilson, G., May, A, & Kraemer, H. (2009). Gender differences in the prevalence of eating disorder symptoms. *International Journal of Eating Disorders, 42*, 471-474.

van Zuuren, F. J. & Dooper, R. (1999). Coping style and self-reported health promotion and disease detection behavior. *British Journal of Health Psychology, 4,* 81-89.

Appendix

Multidimensional Health Behaviors Questionnaire (MHBQ)

Please use the following options to rate how much the following behaviors apply to you. The information in parentheses provides examples or recommendations.

0- unsure, 1-Never, 2-Rarely, 3-Some of the time, 4-Most of the time, 5-Always

1. Avoiding the abuse of prescription or over-the-counter drugs

2. Avoiding the use of illegal drugs

3. Refraining from the use of tobacco

4. Avoiding drinking excessive amounts of alcohol (no more than 2 servings per day for males; no more than 1 serving per day for females)

5. Abstaining from driving after drinking alcohol (more than 1 drink per hour)

6. Replacing your toothbrush regularly (every 3-4 months or after being sick)

7. Brushing your teeth regularly (at least twice a day)

8. Taking care to get enough sleep at night (7-9 hours per night)

9. Minimizing clutter to reduce likelihood of accidents

10. Attempting to eliminate excessive sources of stress

11. Using positive coping techniques to reduce stress

12. Having your blood pressure checked by a professional (at least once a year)

13. Visiting a health professional when abnormally tired

14. Visiting a health professional when experiencing frequent or intense headaches

15. Visiting a health professional when experiencing excessive pain (e.g. tooth pain, back pain)

16. Visiting a physician for a check-up (at least once a year)

17. Visiting an eye doctor on a regular basis (at least once a year)

18. Taking care to try and increase amount of regular activity (e.g. taking the stairs instead of the elevator)

19. Doing rigorous aerobic exercise on a regular basis (30 minutes per day)

20. Doing strength training exercise on a regular basis (at least twice a week)

21. Eating a diet high in fiber (e.g. whole grains)

22. Eating a diet low in simple carbohydrates (e.g. sugar, white bread, white rice)

23. Eating a diet low in “bad” fats (i.e. saturated and trans fats)

24. Eating fruits and vegetables on a regular basis (7 servings a day)

25. When eating fat, choosing “good” fats (i.e. polyunsaturated, monounsaturated, Omega-3)

26. Avoiding fast food

27. Avoiding drinking soda

28. Avoiding high amounts of caffeine (e.g. no more than two cups of coffee per day)

29. Drinking the recommended amount of water each day (six to eight 8-ounce glasses)

30. Seeking reliable, health promoting information (e.g. journal articles, textbooks)

Table 1

Items removed in the Multidimensional Health Behaviors Questionnaire

Item Removed	Item Subscale	Item Text
MHBQ06	Drug-related Behaviors	Avoiding inhaling exhaust fumes
MHBQ07	Maintenance Behaviors	Washing all fruits and vegetables before eating
MHBQ08	Maintenance Behaviors	Using SPF lotion when exposed to bright sunlight for long periods of time (more than 20 minutes)
MHBQ09	Maintenance Behaviors	Using condoms when having sex outside of a monogamous relationship
MHBQ10	Drug-related Behaviors	Using seatbelts in vehicles
MHBQ13	Nutrition Behaviors	Monitoring changes in body weight
MHBQ18	Maintenance Behaviors	Using the internet to find causes of experienced symptoms
MHBQ19	Maintenance Behaviors	Checking skin for changes in moles/birthmarks
MHBQ20	Maintenance Behaviors	Performing breast or testicular self-examinations
MHBQ26	Professional-reliance Behaviors	Having a cholesterol check by a professional (at least once a year)
MHBQ31	Professional-reliance Behaviors	Getting regular dental check-ups (at least once a year)
MHBQ39	Maintenance Behaviors	Taking vitamins and/or mineral supplements on a regular basis (e.g. one multivitamin per day)
MHBQ40	Maintenance Behaviors	Taking care to not skip meals (3 meals per day)

Table 2

Item to subscale Pearson correlations in the MHBQ

Subscale	Item	Pearson Correlation
Drug-related Behaviors	Avoiding the abuse of prescription or over-the-counter drugs	.720
	Avoiding the use of illegal drugs	.749
	Refraining from the use of tobacco	.734
	Avoiding drinking excessive amounts of alcohol (no more than 2 servings per day for males; no more than 1 serving per day for females)	.757
	Abstaining from driving after drinking alcohol (more than 1 drink per hour)	.672
Maintenance Behaviors	Replacing your toothbrush regularly (every 3-4 months or after being sick)	.618
	Brushing your teeth regularly (at least twice a day)	.583
	Taking care to get enough sleep at night (7-9 hours per night)	.592
	Minimizing clutter to reduce likelihood of accidents	.643
	Attempting to eliminate excessive sources of stress	.675
	Using positive coping techniques to reduce stress	.712
Professional-reliance Behaviors	Having your blood pressure checked by a professional (at least once a year)	.705
	Visiting a health professional when abnormally tired	.668
	Visiting a health professional when experiencing frequent or intense headaches	.716
	Visiting a health professional when experiencing excessive pain (e.g. tooth pain, back pain)	.727
	Visiting a physician for a check-up (at least once a year)	.744
	Visiting an eye doctor on a regular basis (at least once a year)	.611
Exercise Behaviors	Taking care to try and increase amount of regular activity (e.g. taking the stairs instead of the elevator)	.718

	Doing rigorous aerobic exercise on a regular basis (30 minutes per day)	.874
	Doing strength training exercise on a regular basis (at least twice a week)	.886
Nutrition Behaviors	Eating a diet high in fiber (e.g. whole grains)	.731
	Eating a diet low in simple carbohydrates (e.g. sugar, white bread, white rice)	.709
	Eating a diet low in “bad” fats (i.e. saturated and trans fats)	.765
	Eating fruits and vegetables on a regular basis (7 servings a day)	.699
	When eating fat, choosing “good” fats (i.e. polyunsaturated, monounsaturated, Omega-3)	.741
	Avoiding fast food	.701
	Avoiding drinking soda	.654
	Avoiding high amounts of caffeine (e.g. no more than two cups of coffee per day)	.660
	Drinking the recommended amount of water each day (six to eight 8-ounce glasses)	.643
	Seeking reliable, health promoting information (e.g. journal articles, textbooks)	.692